

Kenneth Watkins Hudnut

United States Geological Survey
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Born: Oklahoma City, 19 April 1961

Research Interests: Continental active tectonics, fault interactions, earthquake source physics and hazards using geodesy, geology and imagery

Education:

Columbia University Ph.D. in Geology, 1989
Thesis Title: *Active Tectonics of the Salton Trough, So. Calif.*
M.Phil. in Geology, 1989; M.A. in Geology, 1986

Dartmouth College A.B. with High Honors in Earth Sciences, 1983
Thesis Title: *Geophysical Survey of Irazú Volcano, Costa Rica*

Positions & Affiliations:

2002 – present	<i>Geophysicist, GS-15</i>	U.S. Geological Survey, Pasadena
2009 – 2012	<i>Regional Coordinator, Southern California</i>	
2004 – 2009	<i>Geodesy Coordinator, Earthquake Hazards Program Council</i>	
2002 – 2006	<i>Chief, So. Calif. Earthquake Hazard Assessment Project</i>	
1996 - 2002	<i>Geophysicist, GS-14</i> (permanent position)	USGS, Pasadena
1992 - 1996	<i>Geophysicist, GS-13</i> (term position)	USGS, Pasadena
1997 - present	<i>Visiting Assoc. in Geophysics</i>	Division of Geological & Planetary Sciences, California Inst. of Technology
1989-1992	<i>Research Fellow</i>	
1984-1989	<i>Graduate Research Assistant</i>	Lamont-Doherty Geological Observatory
1983-1984	<i>Field Assistant</i>	USGS Branch of Tectonophysics
1983	<i>Field Supervisor</i>	Dartmouth College Volcanology Group

Distinctions (appendix contains details):

Institute of Navigation	2014	Special Recognition Award - GPS Satellite Laser Ranging
U. S. Geological Survey	2009	Shoemaker Award - ShakeOut
U. S. Geological Survey	2009	Pacific Southwest Science Strategy Award - ShakeOut
City of Los Angeles	2009	Certificate of Recognition - ShakeOut
NASA	2008	Honor Award – GPS Satellite Laser Ranging
<i>GPS World</i>	2007	Selected for ‘50+ Leaders to Watch’
U. S. Geological Survey	1999	Special Act Award for Hector Mine earthquake
U. S. Geological Survey	1997	Exceptional Service Award
American Geophysical Union	1994	Invited Review Contributor - Quadrennial U.S. National Report to IUGG (1991-1994)
U. S. Geological Survey	1994	Special Act Award for Northridge earthquake
Dartmouth College	1983	<ul style="list-style-type: none">• Upham prize for outstanding senior honors thesis in Earth Sciences• Academic citation for senior honors thesis• Casque & Gauntlet senior honor society

Service:

FBI	2013	Advisor, ground & airborne imagery & sensors
NASA	2007 – 2013	GPS Satellite Laser Retro-reflector working group
Jet Propulsion Laboratory	2009	DESDynI – Mission Concept Review, panel member
FEMA Region VI RRCC	2011	Subject Matter Expert, National Level Exercise
Southern California Earthquake Center	2009 – 2012	Board of Directors, USGS So. California liaison
	2006 – 2009	Leader, So. San Andreas Fault Evaluation Project
	2001 – 2003; 2006 – 2009	Planning Committee member
	1998 – 2002	Board of Directors
	1996 – 1998	Chair; Crustal Deformation Working Group
	1990 – 2003	Crustal Deformation & Tectonic Geodesy groups
California Integrated Seismic Network	2010 – 2012	Steering Committee, Chair
	2009 – 2012	Steering Committee, Member
Dept. of the Interior	2008 – present	Member of the DOI Remote Sensing Working Group
NAVSTAR Global Positioning System	2002 – present	Project Manager, GPS L1C Signal Design and member of U.S. delegation in international working groups for future signal design of GPS and related systems
California Office of Emergency Services	2008	Scientific Expert for Governor Schwarzenegger & Cabinet Golden Guardian 2008 – ShakeOut Earthquake Scenario
The Great Southern California ShakeOut	2006 – 2009	ShakeOut Scenario Coordinator; Earthquake Designer and ShakeOut Steering Committee member
Los Angeles County Operational Area	2007 – 2009	Golden Guardian 2008 Functional Exercise – Exercise Design Team member
San Bernardino County Operational Area	2007 – 2009	Golden Guardian 2008 – ShakeOut Earthquake Scenario Subject Matter Expert
Southern California Integrated GPS Network	1999 – 2003	Chair (elected position; served four terms)
	1994 – 2003	Executive Committee member and Coordinating Board member
UNAVCO, Inc.	2004 – 2008	PBO Transform Site Selection Working Group
University NAVSTAR Consortium (UNAVCO)	2001 – 2004	PBO Geology Committee (GeoPBO)
	1999 – 2002	PBO Steering Committee member
	2001 – 2004	Board of Directors (elected position; served term limit)
	2000 – 2001	Elected member of Steering Committee
	1995 – 1997	same (served two non-sequential terms)
Amer. Geophys. Union	1992 – 1996	Member of Geodesy Section Executive Comm.
California Department of Transportation	1998 – 2002	Appointed; Caltrans' GPS real-time system development advisory panel
International Assoc. of Geodesy (IAG/IUGG)	1996 – present	International GNSS Service, associate member and IAG affiliate member
California Spatial Reference Center	1998 – present	Coordinating Council member

Editorial:

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|-------------|--|---|
| 2009 – 2011 | Editorial Board; Special Issue
on ShakeOut (May 2011 issue) | <i>Earthquake Spectra</i> |
| 2005 – 2006 | Editorial Board; Special Issue
on the Great Sumatra Earthquakes
and Indian Ocean Tsunamis of
26 December 2004 and 28 March 2005 | <i>Earthquake Spectra</i>
(Earthquake Engineering
and Research Institute) |
| 1994 - 1996 | Associate Editor; Geodesy | <i>J. Geophys. Res. - Solid Earth</i> (AGU) |

Teaching and Research:

- At Institute of Geophysics and Institute of Geology, China Earthquake Administration (CEA) –
2013 Co-taught short course, “Modern Geophysical Studies of the Lithosphere: Structure and Tectonics,” with W. Mooney (USGS) and Yuan Huaiyu (U.C. Berkeley); invited by IGCEA Director, Prof. Wu Zhongliang (73 geophysics grad. students)
- 2010 - 2013 Dissertation advisor for visiting scientist Ph.D. candidate Chen Tao (student of Zhang Peizhen and Jing Liu) on airborne LiDAR and its applications to earthquake research; studies of the 1999 Hector Mine and 1920 Haiyuan earthquake surface ruptures using airborne LiDAR to measure tectonically offset features.
- At University of Houston, Department of Civil & Environmental Engineering & National Center for Airborne Laser Mapping (NCALM) –
2012 – 2013 Committee member for UH M.Sc. candidate Darren Hauser (student of Craig Glennie) on mobile laser scanning (MLS, B-LiDAR) system development.
- At Centro de Investigación Científica y de Educación Superior de Ensenada (CICESE) –
2010 - 2013 Dissertation advisor for CICESE Ph.D. candidate Orlando Teran (student of John Fletcher) on the El Mayor – Cucapah earthquake, stress and regional tectonics
- At University of Southern California –
2008 - 2011 Dissertation committee member for USC Ph.D. candidate Whitney Behr (student of John Platt) on tectonics of the San Andreas fault and slip rate at Biskra Palms Oasis.
- At University of California, San Diego –
2000 - 2005 Dissertation committee member for UCSD Ph.D. candidate Adrian Borsa (student of Bernard Minster) on airborne laser swath mapping project, a quantitative study on surface faulting and tectonic geomorphology (also post-doctoral co-advisor).
- At California Institute of Technology –
1992 - present Advisor to Caltech post-doctoral fellows and students on research projects;
Post-doc's: Shengji Wei, Maren Böse; Ph.D. candidates: C. Rollins, F. Sousa, J. Harvey, D. Zhang, Z. Zhan, A. Meltzner, T. Melbourne, B. Zajac, R. Wolf, J. Spotilla, J. Zachariasen, D. Yule; Undergraduates: A. Morelan, R. Zitola, C. Machacek (many are first authors or co-authors on publications list below)
2010 GE 111 - Applied Geophysics Seminar: Taught classes on GPS & LiDAR
1992 GE 277 - Quaternary Tectonics Seminar: Taught classes on earthquake geodesy
1990 - 1992 GE 177 - Quaternary Geology & Tectonics / Geology of Earthquakes. Taught classes on The Earthquake Cycle and on Earthquake Geodesy
- At Columbia University –
1984 - 1989 GRA and TA for Advanced Structural Geology and several intro classes

Publication Statistics:

h-index 33; total citations **4145**; i10-index **65** (Source: Google Scholar)

h-index 26; total citations **2242** (Source: ISI WoS – ResearcherID B-1945-2009)

Publications:

1. Hudnut, K. and J. Taber, Transition from double to single Wadati-Benioff zone in the Shumagin Islands, Alaska, *Geophys. Res. Lett.*, v. 14, p. 143-146, 1987.
2. Hudnut, K., L. Seeber, J. Pacheco, J. Armbruster, L. Sykes, G. Bond, and M. Kominz, Cross-faults and block rotation in southern California: earthquake triggering and strain distribution, *Lamont-Doherty yearbook*, p. 44-49, 1988.
3. Beavan, J., R. Bilham, K. Hudnut, K. Hurst, Techniques and results of crustal deformation measurement using sea-level gauges, leveling, and extensometers, in Crustal Deformation and Earthquakes, ed. Wu Bing, Seismological Press, 302-319, 1988.
4. Hudnut, K.W., L. Seeber, and J. Pacheco, Cross-fault triggering in the November 1987 Superstition Hills earthquake sequence, southern California, *Geophys. Res. Lett.*, v. 16 #2, p. 199-202, 1989.
5. Hudnut, K., L. Seeber, T. Rockwell, J. Goodmacher, R. Klinger, S. Lindvall, and R. McElwain, Surface ruptures on cross-faults in the 24 November 1987 Superstition Hills earthquake sequence, California, *Bull. Seis. Soc. Amer.*, v. 79 #2, p. 282-296, 1989.
6. Hudnut, K. and K. Sieh, Behavior of the Superstition Hills fault during the past 330 years, *Bull. Seis. Soc. Amer.*, v. 79 #2, p. 304-329, 1989.
7. Hudnut, K., L. Seeber, and T. Rockwell, Slip on the Elmore Ranch fault during the past 330 years and its relation to slip on the Superstition Hills fault, *Bull. Seis. Soc. Amer.*, v. 79 #2, p. 330-341, 1989.
8. Lindvall, S., T. Rockwell, and K. Hudnut, Evidence for prehistoric earthquakes on the Superstition Hills fault from offset geomorphic features, *Bull. Seis. Soc. Amer.*, v. 79 #2, p. 342-361, 1989.
9. McGill, S., C. Allen, K. Hudnut, D. Johnson, W. Miller, and K. Sieh, Slip on the Superstition Hills fault and on nearby faults associated with the 24 November 1987 Elmore Ranch and Superstition Hills earthquakes, southern California, *Bull. Seis. Soc. Amer.*, v. 79 #2, p. 362-375, 1989.
10. Hudnut, K. and M. Clark, New slip along parts of the 1968 Coyote Creek fault rupture, California, *Bull. Seis. Soc. Amer.*, v. 79 #2, p. 451-465, 1989.
11. Hudnut, K. and J. Beavan, Vertical deformation (1952-1987) in the Salton Trough, California, from water level recordings, *J. Geophys. Res.*, v. 94, p. 9463-9476, 1989.
12. Hudnut, K. W., *Seismology: Recent Advances in the Study of Prehistoric Earthquakes*, in *The 1991 McGraw-Hill Yearbook of Science and Technology*, McGraw-Hill, Inc., New York, p. 377-379, 1990.

13. Jones, L., K. Sieh, D. Agnew, C. Allen, R. Bilham, M. Ghilarducci, B. Hager, E. Hauksson, K. Hudnut, D. Jackson, and A. Sylvester, Short-term Earthquake Hazard Assessment for the Southern San Andreas Fault, Southern California, *U.S.G.S. Open-File Report #91-32*, 1991.
14. Petersen, M.D., L. Seeber, L. Sykes, J. Nabelek, J. Armbruster, J. Pacheco, and K. Hudnut, Seismicity and fault interaction, southern San Jacinto fault zone and adjacent faults, southern California: Implications for seismic hazard, *Tectonics*, v. 10, No. 6, pp. 1187-1203, 1991.
15. Hudnut, K.W., "Faults", in *Encyclopedia of Earth System Science, Volume 2*, Academic Press, Inc., San Diego, p. 219-225, 1992.
16. Hudnut, K.W., Geodesy tracks plate motion (editorial), *Nature*, v. 355, No. 6362 (20 February), 1992.
17. Mori, J., K. Hudnut, L. Jones, E. Hauksson, and K. Hutton ('compilers'), Rapid scientific response to the Landers quake, *EOS, Trans. Amer. Geophys. Union*, v. 73, No. 39 (29 September), pp. 417-418, 1992.
18. Lindvall, S.C. and K.W. Hudnut, Field guide to the area of maximum displacements along the 1992 Landers earthquake rupture, in *Landers Earthquake of June 28, 1992 - San Bernardino County, California*, Assoc. Engin. Geol. (So. Calif. Sect.), pp. 33-38, Oct. 10, 1992.
19. Bock, Y., D. Agnew, P. Fang, J. Genrich, B. Hager, T. Herring, K. Hudnut, R. King, S. Larsen, J.-B. Minster, K. Stark, S. Wdowinski, and F. Wyatt, Detection of crustal deformation related to the Landers earthquake sequence using continuous geodetic measurements, *Nature*, v. 361, No. 6410 (28 January), pp. 337-340, 1993.
20. Sieh, K., L. Jones, E. Hauksson, K. Hudnut, D. Eberhart-Phillips, T. Heaton, S. Hough, K. Hutton, H. Kanamori, A. Lilje, S. Lindvall, S. McGill, J. Mori, C. Rubin, J. Spotila, J. Stock, H.K. Thio, J. Treiman, B. Wernicke, and J. Zachariasen, Near-field investigations of the Landers earthquake sequence, April to July, 1992, *Science*, v. 260 (April 9), pp. 171-176, 1993.
21. Hudnut, K. W., Y. Bock, M. Cline, P. Fang, Y. Feng, J. Freymueller, X. Ge, W. K. Gross, D. Jackson, M. Kim, N. E. King, J. Langbein, S. C. Larsen, M. Lisowski, Z-K. Shen, J. Svarc and J. Zhang, Coseismic Displacements of the 1992 Landers earthquake Sequence, *Bull. Seis. Soc. Amer.*, 84(3), 625-645, 1994.
22. Johnson, H. O., D. C. Agnew, and K. Hudnut, Extremal bounds on earthquake moment from geodetic data: application to the Landers earthquake, *Bull. Seis. Soc. Amer.*, 84(3), 660-667, 1994.
23. Bodin, P., R. Bilham, J. Behr, J. Gomberg, and K. Hudnut, Slip triggered on southern California faults by the Landers earthquake sequence, *Bull. Seis. Soc. Amer.*, 84(3), 806-816, 1994.
24. Hudnut, K. W., The Inter-County Surveys. 25 pgs. 4/15/93. (Report to surveying community in So. Calif. on results of the 1991 & 1992 Inter-County GPS surveys).
25. Hudnut, K. W., Inter-County 1993 Survey Progress Report. 6 pgs. 11/11/93. (Report to surveying community in So. Calif. on results of the 1993 Inter-County GPS survey).

26. Bennett, R., R. Reilinger, W. Rodi, Y. Li, K. Hudnut, Coseismic fault slip associated with the 1992 Mw 6.1 Joshua Tree, California earthquake: Implications for the Joshua Tree - Landers earthquake sequence, *J. Geophys. Res.*, v. 100, No. 4, pp. 6443-6461, 1995.
27. USGS and SCEC Scientists (Jones, L. et al., including K. Hudnut), The magnitude 6.7 Northridge, Calif. earthquake of 17 January 1994, *Science*, 266 (Oct. 21 issue), 389-397, 1994.
28. Peltzer, G., K. W. Hudnut, K. L. Feigl, Analysis of coseismic surface displacement gradients using radar interferometry: New insights into the Landers earthquake, *J. Geophys. Res.*, v. 99, #11, pp. 21871-21981, 1994.
29. Hudnut, K. W., Earthquake geodesy and hazard monitoring, *Reviews of Geophysics (Supplement)*, U. S. National Report to IUGG, 1991-1994, pp. 249-255, 1995.
30. Hudnut, K. W., Z. Shen, M. Murray, S. McClusky, R. King, T. Herring, B. Hager, Y. Feng, P. Fang, A. Donnellan, and Y. Bock, Coseismic displacements of the 1994 Northridge, Calif., earthquake, *Bull. Seis. Soc. Amer.* (Special Issue), v. 86, No. 1, Part B, pp. S19-S36, 1996. (see RDSR item #19)
31. Wald, D. J., T. H. Heaton, and K. W. Hudnut, The slip history of the 1994 Northridge, Calif., earthquake determined from strong-motion, teleseismic, GPS and leveling data, *Bull. Seis. Soc. Amer.* (Special Issue), v. 86, No. 1, Part B, pp. S49-S70, 1996.
32. Murray, M.H. and K. W. Hudnut, Measuring regional ground deformation with the Global Positioning System, *Earthquakes and Volcanoes* (Special Issue), v. 25, Number 2, pp. 62-74, 1994.
33. Hudnut, K. W., J. Mori, W. Prescott and P. Stauffer, Southern Californians cope with earthquakes, U. S. Geological Survey Fact Sheet #225-95, 2 pp., 1995.
34. DeMets, C. I. Carmichael, T. Melbourne, O. Sanchez, J. Stock, G. Suarez and K. Hudnut, Anticipating the successor to Mexico's largest historical earthquake, *EOS, Trans. Amer. Geophys. Union*, v. 76, No. 42 (17 October), pp. 417 & 424, 1995.
35. Bayarsayhan, Ch., A. Bayasgalan, B. Enhtuvshin, K. W. Hudnut, R. A. Kurushin, P. Molnar, and M. Olziyatbat, The 1957 Gobi-Altay, Mongolia earthquake as a prototype for southern California's most devastating earthquake, *Geology*, v. 24, No. 7, pp. 579-582, 1996.
36. Hudnut, K. W., Near real-time monitoring of Pacoima Dam, Los Angeles, California, 1 pp., *Science Snapshots*, UNAVCO (Boulder, Colorado), 1996.
37. Peltzer, G., P. Rosen, F. Rogez, K. Hudnut, Postseismic rebound in fault step-overs caused by pore fluid flow, *Science*, v. 273 (Aug. 30), pp. 1202-1204, 1996.
38. Hodgkinson, K.M., R. S. Stein, K. Hudnut, J. Satalich and J. Richards, Damage and restoration of geodetic infrastructure caused by the 1994 Northridge, Calif., earthquake, *U. S. Geological Survey Open-File report #96-517*, 70 pp., 1996.
39. Melbourne, T., I. Carmichael, C. DeMets, K. Hudnut, O. Sanchez, J. Stock, G. Suarez, and F. Webb, The geodetic signature of the M8.0 October 9, 1995 Jalisco subduction earthquake, *Geophys. Res. Lett.*, v. 24, No. 6, pp. 715-718, 1997.
40. Kurushin, R. A., A. Bayasgalan, M. Olziyatbat, B. Enhtuvshin, P. Molnar, Ch. Bayarsayhan, K. Hudnut, J. Lin, The surface rupture of the 1957 Gobi-Altay, Mongolia,

earthquake, Geological Society of America, *Special Paper 320*, 160 pp. and 2 maps, 1997.

41. Bock, Y. et al. (incl. K. Hudnut), Southern California permanent GPS geodetic array: continuous measurements of regional crustal deformation between the 1992 Landers and 1994 Northridge earthquakes, *J. Geophys. Res.*, v. 102, B8, pp. 18013-18033, 1997.
42. Stein, R. S., K. W. Hudnut, J. Satalich, K. M. Hodgkinson, Monitoring damage to bridges and highways with GPS: insights from the 1994 Northridge earthquake, in *Proceedings of the National Seismic Conference on Bridges and Highways* [Sacramento, CA; July 8-11, 1997], pp. 347-360, 1997.
43. Shen, Zheng-kang, Dong, Danan, Herring, Thomas, Hudnut, Kenneth, Jackson, David, King, Robert, McClusky, Simon, Sung, Li-yu, Crustal deformation measured in Southern California, *EOS, Transactions, American Geophysical Union*, 78 (43), p. 477, 482, 1997. (chaired SCEC working group that produced the data product highlighted in this article)
44. Savage, J.C., J.L. Svarc, W.H. Prescott, and K.W. Hudnut, Deformation following the 1994 Northridge earthquake ($M=6.7$), southern California, *Geophys. Res. Lett.*, v. 25, No. 14, pp. 2725-, 1998.
45. Hudnut, K. W. and J. A. Behr, Continuous GPS monitoring of structural deformation at Pacoima Dam, California, *Seismol. Res. Lett.*, Vol. 69, No. 4, pp. 299-308, 1998.
46. That Dam Deformation, *GPS World Showcase* (Applications Contest entry, submitted by K. Hudnut and J. Behr), Vol. 9, No. 8, pg. 46, August 1998.
47. Galloway, D.L., K.W. Hudnut, S.E. Ingebritsen, S.P. Phillips, G. Peltzer, F. Rogez, and P. Rosen, Detection of aquifer system compaction and land subsidence using interferometric synthetic aperture radar, Antelope Valley, Mojave Desert, California *Water Resour. Res.*, Vol. 34 , No. 10 , p. 2573-2586, 1998.
48. Wald, D. J., K. W. Hudnut, and T. H. Heaton, Estimation of uniformly spaced, near-source, broadband ground motions for the 1994 Northridge earthquake from forward and inverse modeling, *Proceedings of the NEHRP conference & workshop on research on the Northridge earthquake of Jan. 17, 1994, California Universities for Research in Earthquake Engineering (CUREe)*, Volume II, Earth Sciences, pp. 429-436, 1998.
49. Bock, Y., M. Van Domselaar, S. Williams, P. Fang, K. Hudnut, Southern Calif. PGGA: continuous measurements of crustal deformation in the LA Basin between the 1992 Landers and 1994 Northridge earthquakes, *Proceedings of the NEHRP conference & workshop on research on the Northridge earthquake of Jan. 17, 1994, California Universities for Research in Earthquake Engineering (CUREe)*, Volume II, Earth Sciences, pp. 207-215, 1998.
50. Behr, J. A., K. Hudnut, and N. King, Monitoring structural deformation at Pacoima Dam, California, using continuous GPS, *Proceedings of the 11th International Technical Meeting of the Satellite Division of the Institute of Navigation* [ION GPS-98; Nashville, TN], pp. 59-68, 1998.
51. Peltzer, G., P. Rosen, F. Rogez, and K. Hudnut, Post-seismic deformation along the Landers 1992 earthquake surface rupture, *J. Geophys. Res.*, v. 103, No. B12, pp. 30,131-30,145, 1998.

52. Molnar, P., Kurushin, A. Bayasgalan and K. W. Hudnut, The surface rupture of the 1957 Gobi-Altay, Mongolia, earthquake, [this is publication #42, translated in its entirety into Russian, also including a transcription of the original 1957 field notes], published by the Russian Academy of Sciences, 147 pp. and 1 map, 1998.
53. Celebi, M., W. Prescott, R. Stein, K. Hudnut, J. Behr, and S. Wilson, GPS monitoring of dynamic behavior of long-period structures, *Earthquake Spectra*, v. 15, No. 1, pp. 55-66, 1999.
54. Deng, J., K. Hudnut, M. Gurnis and E. Hauksson, Stress loading from viscous flow in the lower crust and triggering of aftershocks following the 1994 Northridge, Calif., earthquake, *Geophys. Res. Lett.*, v. 26 (1), pp. 3209-3212, 1999.
55. Hudnut, K. W., Y. Bock, J. E. Galetzka, F. H. Webb, and W. H. Young, The Southern California Integrated GPS Network (SCIGN), *Proceedings of the International Workshop on Seismotectonics at the Subduction Zone*, Y. Fujinawa (ed.), NIED, Tsukuba, Japan, pp. 175-196, 1999.
56. Scientists from the USGS, SCEC, and CDMG (incl. K. Hudnut), A preliminary report on the 10/16/99 M7.1 Hector Mine, Calif., earthquake, *Seis. Res. Lett.*, v. 71, No. 1, pp. 11-23, 2000.
57. Hudnut, K. W., Y. Bock, J. E. Galetzka, F. H. Webb, and W. H. Young, [The Southern California Integrated GPS Network \(SCIGN\)](#), *Proceedings - 10th FÉDÉRATION INTERNATIONALE DES GÉOMÈTRES (FIG) International Symposium on Crustal Deformation Measurement*, pp. 129-148, March 19-22, 2001.
58. Hudnut, K. and N. King, SCIGN – New Southern California GPS Network Advances the Study of Earthquakes, USGS Fact Sheet #069-01; U. S. Government Printing Office #2001-J-684-957, 2001.
59. Bawden, G., W., W. Thatcher, R. S. Stein, K. Hudnut, and G. Peltzer, Groundwater pumping masks tectonic deformation near Los Angeles, Calif., *Nature*, v. 412, 23 August, pp. 812-815, 2001.
60. Hudnut, K. W., Decimeter-order spatial resolution: imaging and swath mapping systems for tectonic, volcanic, geodetic and paleoseismic research, in *Proceedings of EarthScope 'Making and Breaking a Continent' workshop; Snowbird, Utah*, pp. 230-235, 2001.
61. Hudnut, K. W., N. E. King, J. E. Galetzka, K. F. Stark, J. A. Behr, A. Aspiotes, S. van Wyk, R. Moffitt, S. Dockter, and F. Wyatt, [Continuous GPS observations of postseismic deformation following the 16 October 1999 Hector Mine, California, earthquake \(Mw7.1\)](#), *Bull. Seismol. Soc. Amer.*, v. 92, No. 4, pp. 1403-1422, 2002.
62. Hudnut, K. W., A. Borsa, C. Glennie, and J.-B. Minster, [High-resolution topography along surface rupture of the 16 October 1999 Hector Mine, California, earthquake \(Mw7.1\) from airborne laser swath mapping](#), *Bull. Seismol. Soc. Amer.*, v. 92, No. 4, 1570-1576, 2002.
63. Hudnut, K. W., G. J. Anderson, A. Aspiotes, N. E. King, R. Moffitt, K. F. Stark, [GPS fault slip sensors](#), *2002 Asia-Pacific Economic Cooperation (APEC) Symposium on Confronting Urban Earthquakes & Seismic Early Warning*, Academia Sinica, Taipei, Taiwan, pp. 93-96, 2002.

64. Celebi, M., W. Prescott, R. Stein, K. Hudnut, J. Behr, and S. Wilson, GPS monitoring of structures: recent advances, Early Warning Systems for Natural Disaster Reduction, *Chapter 7.5 in J. Zschau & A. Koppers (Eds.)*, Springer-Verlag, Heidelberg, ISBN 3-540-67962-6, pp. 709-714, 2003.
65. Anderson, G., B. Aagaard, and K. Hudnut, Fault interactions and large complex earthquakes in the Los Angeles area, *Science*, vol. 302 (12 December), pp. 1946-1949, 2003.
66. Hudnut, K. W. and B. Titus, *GPS L1 Civil Signal Modernization (L1C)*, Interagency GPS Executive Board, Report on Stewardship Project #204, 30 July 2004, 444 pp.
67. Hardebeck, J., J. Boatwright, D. Dreger, R. Goel, V. Graizer, K. Hudnut, C. Ji, L. Jones, J. Langbein, J. Lin, E. Roeloffs, R. Simpson, K. Stark, R. Stein, J. Tinsley, Preliminary report on the 22 December 2003, M 6.5 San Simeon, California earthquake, *Seismol. Res. Lett.*, v. 75, No. 2, pp. 155-172, 2004.
68. Larson, K. M., A. R. Lowry, V. Kostoglodov, W. Hutton, O. Sanchez, K. Hudnut and G. Suarez, Crustal deformation measurements in Guerrero, Mexico, *J. Geophys. Res.*, v. 109, B04409, doi:10.1029/2003JB002843, 2004.
69. Ross, S. L., Boore, D. M., Fisher, M. A., Frankel, A. D., Geist, E. L., K. Hudnut, K. W., Kayen, R. E., Lee, H. J., Normark, W. R., and Wong, F. L., 2004, Comments on potential geologic and seismic hazards affecting coastal Ventura County, California: *U.S. Geological Survey Open-File Report 2004-1286*, 20 pp. [available at <http://pubs.usgs.gov/of/2004/1286/>], 2004.
70. Ji, Chen, K. M. Larson, Y. Tan, K. W. Hudnut, and K. Choi, Slip history of the 2003 San Simeon earthquake constrained by combining 1-Hz GPS, strong motion and teleseismic data, *Geophysical Research Letters*, v. 31, L17608, doi:10.1029/2004GL020448, 2004.
71. Sanchez, R. D. and K. W. Hudnut, GPS-aided inertial technology and navigation-based photogrammetry for aerial mapping of the San Andreas fault system: *U.S. Geological Survey Open-File Report 2005-1389*, 12 pp., 2005.
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Appendix (Award Details):

Institute of Navigation January 2014 Special Recognition Award – GPS III SLR
“In grateful recognition for the multi-year effort to make the implementation of laser retro-reflectors on GPS III a reality and enhance its performance and interoperability for generations to come.”

The GPS SLR Implementation Team established a way forward to allow for the implementation of laser ranging to the GPS III constellation beginning with SV-9 in the 2019 time frame. The laser ranging to GPS III, followed by post-processed analysis and mitigation of systematic errors, will contribute significantly to achieving the goal of a more accurate International Terrestrial Reference Frame (ITRF). These applications will be augmented by an ongoing and significant international investment in the global geodetic infrastructure of the Geodetic Observing System observing networks and analysis systems. Laser ranging of GPS III will encourage further international industry innovations as higher precisions are introduced to the world community.

U. S. Geological Survey February 2009 USGS Western Region Award - ShakeOut

Pacific Southwest Science Strategy Success Story:

“For Advancing the Goals of the USGS Science Strategy Through the Development and Execution of the 2008 Great Southern California ShakeOut Scenario and Exercise.”

City of Los Angeles January 2009 Certificate of Recognition - ShakeOut

Certificate of Recognition is hereby presented to Dr. Ken Hudnut:

“For your service to the City of Los Angeles and all of southern California as a Steering Committee Member for the Great Southern California ShakeOut, a week of earthquake preparedness events, including the largest earthquake drill in U. S. history based on the 7.8 magnitude San Andreas fault earthquake scenario. Your time and dedication to this effort have made our City safer and more prepared.”

NASA Honor Award May 2008 Group Achievement Award – GPS III SLR

Group Achievement Award to Satellite Laser Ranging Team:

“For outstanding efforts in defining GPS III geodetic requirements to improve GPS performance and help maintain the system’s preeminence for civil, scientific and military goals.”

GPS World May 2007 Selected for ‘[50+ Leaders to Watch](#)’

Presented to Ken Hudnut (for leading the GPS L1C signal design):

“In Recognition for Contributions Made to the Global Navigation and Positioning Industry.”